Composting Animal Mortalities On the Farm

All farmers know that properly disposing of dead animal carcasses, can be a challenge. With rendering services being scarce and expensive, other options for disposal are becoming more attractive.

Composting animal mortalities from the farm can be a cost-effective alternative to rendering and is environmentally safer and more biosecure than burying or the "back 40" method commonly used.

This brochure will introduce you to composting whole dead animals, from chickens to cows. It is not meant to be a comprehensive guide, but rather an overview of the process.

Composting any material involves trial and error. Success depends on the materials, the weather and many other variables. If you don't succeed the first time, tweak the process until you achieve the results you want. Use this brochure to get started. There are resources and resource people to help and answer your questions along the way.

COMPOSTING is a natural biological process in which bacteria, fungi and other microorganisms break down organic matter into a stable, nutrient-rich soil amendment. By managing this process, animal carcasses from chickens to pigs to cows can be successfully composted, and the end product used on fields and pastures.

Courtesy of Cornell Waste Management Institute

WHY COMPOST?

It saves money – rendering pick-up fees have reached up to $70 per cow in some areas. Composting costs a farmer some time in labor and, if they are not available free, the cost of buying and transporting bulking agents.

It is safer for groundwater and surface waters. The heat and microorganisms of the composting process destroy many pathogens, such as harmful bacteria and viruses. If a carcass is buried or left for scavengers, these disease agents can reach well water or be carried into rivers, streams and ponds. Even grazing animals themselves can act as vectors spreading disease.

It is more biosecure than having a truck of dead animals coming onto your farm for a pick up or having dead animals stored near the farm waiting for transport. If your animal is diseased you will also be taking positive steps to prevent the problem from spreading.

It is an easy process to master and uses equipment that is already available on most farms.

HOW IS IT DONE?

The steps to successful composting are simple.

Verify Whether You Need A Permit: Composting *your own* animal mortalities on *your own* farm ***does not*** require a permit in Vermont. This permit exemption holds as long as the composting does not create discharges of contaminated runoff into groundwater, streams, or wetlands and does not cause odors off-site.

Composting *your animal on someone else's property*, or *composting someone else's animal on your farm*, ***does*** require obtaining a permit from the Vermont Agency of Natural Resources. There is **NO FEE** for this permit. Call the Solid Waste Management Program at 802-241-3444 for an application.

Prepare a Site: Siting the compost pile is critical to success and safety. Choose a dry, slightly sloped site (1-2% slope) that has **good all-weather access** so you can work the pile year-round. All sites should be, and all permitted sites MUST be:

- at least 3 feet above seasonal high groundwater levels;
- at least 6 feet above bedrock;
- over 100 feet away from any surface waters;
- over 150 feet away from roads or property lines; and
- outside any Class 1 groundwater area, any wetland area or its buffer, or any Source Protection Area for drinking water.

Your local NRCD office has soil mapping programs that can help you locate the best site.

Other site considerations include:

- the site should be at least 200 feet from your own and your neighbors' wells
- the prevailing wind direction should be away from neighbors, the pile out of their lines of sight and as far away from property lines as possible;
- runoff and run-on should be controllable;
- the pile should be on impermeable soils or on a concrete pad;
- a *slight* slope will prevent water from puddling.

Prepare the Bed: The base of the compost pile is made up of one or more bulking agents such as dry (not green) wood shavings or chips, saw dust, chopped straw, dry heavily bedded animal manure, finished compost or other dry organic materials.

Pieces should be less than ¾ of an inch in size but should be no larger than 2 – 3 inches. This helps ensure good airflow into the pile and provides enough absorbency to capture runoff fluids.

- Create a base that is 24 inches deep and large enough to allow two feet of clearance around the entire carcass.
- If using only wood chips, place a layer of absorptive material such as finished compost, dry manure or bedding about 6 inches deep over the wood chips.

Place the Animal: Lay the carcass in the center of the bed making sure no part is within two feet of an edge.

- Pierce the rumen or cavity. This prevents the build up of gases that can become explosive in the heat of a composting pile.
- Cutting into the flanks will hasten the decomposition process.
- If composting more than one large animal in a pile, separate them by placing one foot of bulking agent between each carcass. If composting small animals weighing less than 50 lbs., create layers of animals by placing two feet of bulking agent between each layer.

Cover the Animal: Cover the animal with another two feet of dry bulking agent. Dry silage, haylage or manure can be used for the first 12 inches. Then use sawdust, or even old compost remaining from a previous batch to seal the pile, prevent odors from escaping and discourage scavengers.

Monitor the Pile: A good compost pile must maintain a temperature above 131°F for at least three consecutive days in order to kill pathogens and weed seeds. Thermometers with extended probes designed for measuring the internal temperatures in a compost pile are readily available at supply stores. Take the temperature at least 6-8 inches deep inside the pile and record it daily until you have recorded three days in a row above 131°F.

- Let the pile sit for 2 – 4 months. DO NOT turn an active compost pile as this may release very strong odors which can result in off-site odor problems;
- Check the temperature periodically. The pile will eventually cool down to the outside temperature. This means that composting activity has stopped.

Turn the Pile: Once the active composting phase has stopped, carefully turn the pile over with a bucket loader. If the carcass did not compost properly strong odors may be released.

- Examine the contents to determine how complete the composting has been.
- Large bones may still be evident and should be removed and placed in the next pile.
- If the composting process is incomplete, turn the pile to provide air, re-cover it with more bulking agent and allow it to compost again. Silage or manure are good bulking agents for restarting a pile. Also check and adjust the moisture content (see Troubleshooting Problems).

Use the Compost: The finished compost can be spread on row crops and hay land or used as the bed and top dressing for new active compost piles. This helps to save on the cost of other bulking agents. For aesthetic reasons, retail marketing of compost made from animal mortalities to the public may prove difficult and is not recommended.

Report To The Permit Certifier: Any composting operation governed by a permit must submit an annual report to Vermont ANR.

Cost-Share Dollars for composting are available through USDA's EQIP Program. Up to 75% of the cost of a heavy use area protection pad may be obtainable. Contact your local USDA-Farm Service Agency office to apply.

TROUBLESHOOTING PROBLEMS

The pile does not heat up.

1) The pile is not getting enough airflow through it.
- Turn the pile onto a bed made up of larger size pieces of bulking agent that is 2 feet thick.

2) The pile is either too wet or too dry.
- Moisture content of a good pile should be between 50 - 60%, and should feel like a damp sponge. Too much water suffocates the microbes while too little prevents them from moving around the pile and restricts airflow through the pile.
- If too dry, add water or liquid manure.
- If too wet, protect the pile from rain and snow.

3) The pile is too small to maintain heat.
- Winter conditions generally require piles to be shaped more like mounds than windrows. Create a pile that is at least 4' x 4'. Revert back to windrow pile management in spring.
- Increase the top-dressing material thickness.
- Add fresh warm manure and recover the pile with a bulking agent.

Scavengers and insects are invading the pile.

1) The cover layer is not thick enough to prevent odors or the pile is not hot and active enough.
- Cover the pile with a thicker layer of bulking agent such as wood chips or old compost.
- Prevent standing water: fill any puddle holes and slope the site slightly (1-2%).
- Add fresh warm manure and recover the pile with a bulking agent.

Leachate is running off the site.

1) The pile is too wet.
- Prevent rain & meltwater from running into the pile by diverting it around the site;
- Add more dry bulking agent;
- Cover the pile with a roof or specialized compost cover (see Technical Assistance);
- Build a berm around the pile with wood chips or finished compost to absorb the leachate.

2) The site has too much slope.
- Build a berm around the pile with wood chips or finished compost;
- Relocate the pile to a flatter area;
- If possible, collect the leachate for spreading on fields.

FOR MORE INFORMATION

Vermont Composting Resource Site 802-241-3448
http://www.anr.state.vt.us/dec/ wastediv/compost/main2.html

Permit applications - ANR Solid Waste Management Program
802-241-3444

Cornell Waste Management Institute 607-255-1187
http://www.cfe.cornell.edu/wmi/

Fact Sheet:
Natural Rendering: Composting Livestock Mortality and Butcher Waste Call 607-255-1187 to order or download at
http://compost.css.cornell.edu/NaturalRenderingFS.pdf

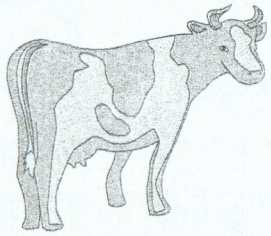
Videos:
- *On-Farm Composting: Manure and More*
- *Natural Rendering: Composting Livestock Mortality and Butcher Waste*

Call 607-255-7654 to order or UVM Extension to borrow

TECHNICAL ASSISTANCE

Natural Resources Conservation District,
Agricultural Resource Specialists, to locate yours call 802-828-3529 or see www.vacd.org

Champlain Valley Compost Co. 802-425-5556
Steven Wisbaum, steven@cvcompost.com
http://www.cvcompost.com/
compost covers available



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